

# STATE OF INDIANA

## STREAM POLLUTION CONTROL BOARD

January 20, 1983



INDIANAPOLIS 46206

1330 West Michigan Street  
P. O. Box 1964

JC  
8/10/83

### VIA CERTIFIED MAIL

John A. DePaul, Vice-President  
RSR Corporation  
1111 West Mockingbird Lane  
Dallas, TX 75247

Signif

Dear Mr. DePaul:

Re: NPDES Permit No. IN 0053171  
Quemetco, Inc.  
Indianapolis, IN

Your application for a National Pollutant Discharge Elimination System (NPDES) Permit has been processed in accordance with Sections 402 and 405 of the Federal Water Pollution Control Act as amended by PL 92-500 and PL 95-217 (33 U.S.C. 1251, et seq.), and Public Law 100, Acts of 1972, as amended (IC 13-7, et seq., the "Environmental Management Act"). The enclosed NPDES Permit covers your facility which is a secondary lead smelter engaged in the recycling of lead from automotive-type batteries and which discharges into Julia Creek. All discharges from this facility shall be consistent with the terms and conditions of this permit.

It should be clearly understood that exceeding the limitations constitutes a violation of the permit and may subject the permittee to criminal or civil penalties. (See Part II A1 and B6.) It is therefore urged that your office and treatment operator understand this part of the permit.

The following responses are made to the comments on the draft permit submitted on behalf of RSR Corporation (RSR) by its attorneys, Akin, Gump, Strauss, Hauer and Feld. First, while RSR's attorneys suggest that this agency is inadvertently blurring the separate corporate identities of the two corporations, we believe that it is RSR which has blurred the distinction. Frequently, in its correspondence with this agency or the State Board of Health, RSR has referred to the permit as its permit. The most recent, as well as previous comments, by RSR on NPDES permits proposed by this agency for the Quemetco facility have been submitted by RSR's attorneys on its behalf, never on behalf of Quemetco, Inc. In its correspondence and its actions respecting this agency, RSR has consistently appeared as the prime mover in the operation of the Quemetco facility and the discharge of wastewaters therefrom. Moreover, the permit application submitted in February,

1981, expressly indicates that RSR is operator of the facility. In summary, while it is a legally recognized fiction in general, that a parent corporation may have a separate corporate existence from its wholly-owned subsidiary, RSR and Quemetco have failed to maintain even the appearance of that fiction, in our opinion.

Nonetheless, we have decided to grant your request at this time and are issuing the permit to "Quemetco, Inc., a subsidiary of RSR Corporation." If, however, RSR continues to disregard the appearance of separate corporate identities and if substantial noncompliance with this permit occurs, this agency reserves the right to seek redress from RSR as well as Quemetco, Inc.

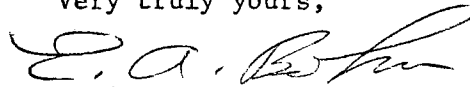
Second, we unintentionally omitted the noncontact cooling water as an authorized discharge in the draft permit and have revised page 2 thereof to rectify the omission. Third, we agree that the "oil sheen" condition on page 3 of the proposed permit is redundant in light of the numerical limitations for oil and grease and have deleted said condition from the final permit.

Fourth and finally, we do not believe we can properly defer compliance with permit limitations within the context of the permit document. The effluent limitations for almost all the metallic pollutants are based on existing State water quality standards and, pursuant to Section 301(b)(1)(C) of the Federal Clean Water Act, cannot be legally deferred in the permit. It is conceivable that a consensual order can be developed which would establish a schedule of compliance with the permit limitations.

It should also be noted that any appeal must be filed under procedures outlined in 330 IAC 5-16. The appeal must be initiated by filing with the Stream Pollution Control Board a request for an adjudicatory hearing within 30 days of receipt of this letter.

If you have any questions, please contact Mr. Larry Kane at 317/633-0761.

Very truly yours,



Earl A. Bohner  
Technical Secretary

LJK/jad

Enclosures

cc: Chief, Permit Section U.S. EPA Region V  
Marion County Health Department  
David P. Callet, P.C.  
Ted Carmichael

INDIANA STREAM POLLUTION CONTROL BOARD  
AUTHORIZATION TO DISCHARGE UNDER THE  
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Water Pollution Control Act, as amended by P.L. 92-500 and P.L. 95-217 (33 U.S.C. 1251 et seq., the "Act"), and Public Law 100, Acts of 1972, as amended (IC 13-7, et seq., the "Environmental Management Act"), QUEMETCO, INC., a subsidiary of RSR CORPORATION, is authorized to discharge from a facility which recycles and refines lead from used lead batteries and that is located at 900 Quemetco Drive, Indianapolis, Indiana, to receiving waters named Julia Creek in accordance with effluent limitations, monitoring requirements, and other conditions set forth in Parts I and II hereof.

The permit shall become effective on the thirtieth day after its receipt by the permittee.

This permit and the authorization to discharge shall expire at midnight January 18, 1988. In order to receive authorization to discharge beyond the date of expiration, the permittee shall submit such information and forms as are required by the Indiana Stream Pollution Control Board no later than 180 days prior to the date of expiration.

Signed this 19 day of January, 1983, for the  
Indiana Stream Pollution Control Board.

  
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Technical Secretary

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PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

- During the period beginning on the effective date of this permit and lasting until the expiration date, the permittee is authorized to discharge from outfall(s) 002. Such discharge shall be limited and monitored by the permittee as specified below:

Discharge Limitations

Effluent Characteristic	kg/day (lbs/day)		Other Limitations		Monitoring Measurement Frequency	Requirement Sample Type
	Daily Average	Daily Maximum	Daily Average	Daily Maximum		
Flow (MGD)	--	--	--	--	Measure when sampling 1/wk during discharge if any	Grab
Oil & Grease	--	--	--	10 mg/l		
Total Lead	--	--	0.15 mg/l	0.30 mg/l	"	24-hr Composite
Cadmium	--	--	0.01 mg/l	0.02 mg/l	"	"
Arsenic	--	--	0.03 mg/l	0.06 mg/l	"	"
Iron*	--	--	0.50 mg/l	1.00 mg/l	"	"
Copper	--	--	0.05 mg/l	0.10 mg/l	"	"
Un-ionized Ammonia-N** (NH <sub>3</sub> -N)	--	--	0.03 mg/l	0.05 mg/l	--	--
Total Ammonia-N** (NH <sub>3</sub> -N + NH <sub>4</sub> -N)	--	--	--	--	1/wk during discharge if any	Grab
Temperature**	--	--	--	--	"	"

Discharge #002 is limited solely to roof and surface storm runoff water and noncontact cooling water. The Permittee shall provide storm runoff collection facilities, constructed and operated so as to contain the precipitation from the 10-year, 24-hour rainfall event as established by the National Climatic Center, National Oceanic and Atmospheric Administration, for the area in which the permitted facility is located. The Permittee may discharge impounded storm runoff in accordance with the discharge limitations set forth in the aforementioned table. No discharge limitations shall apply to the discharge of storm runoff which occurs in excess of the available capacity of the Permittee's storm runoff containment and treatment facilities when constructed and operated so as to treat and discharge impounded storm runoff at a minimum daily flow rate equal to the volume of the storm runoff resulting from the 10-year, 24-hour rainfall event.

event divided by 7. The Permittee shall have the burden of demonstrating to the Indiana Stream Pollution Control Board that the prerequisites to an exemption set forth in this paragraph have been met.

\*The Indiana Stream Pollution Control Board may, after a period of six months from the date this permit is issued revise or waive these monitoring requirements without public notice or opportunity for public hearing.

\*\*Un-ionized ammonia nitrogen ( $\text{NH}_3$ ), the toxic species in aqueous ammonia solutions, is not directly analyzed by chemical methods. The chemical analyses of water samples for ammonia report the total ammonia ( $\text{NH}_3 + \text{NH}_4^+$ ) concentration. Since the degree of ionization of ammonia in aqueous solutions is a function of pH and temperature, the pH and temperature measurements are to be taken simultaneously with the taking of the total ammonia sample. The monitoring results for un-ionized ammonia required by this permit can then be calculated using the sample analyses for pH, temperature and total ammonia in the following formula:

$$\text{Un-ionized Ammonia (mg/l)} = \left[ \frac{\text{Total Ammonia (mg/l)}}{1 + 10^{(0.09018 + \frac{2729.9}{273.2 + T} - \text{pH})}} \right]$$

Where T is in °C

- a. The pH shall not be less than 6.0 nor greater than 9.0. The pH shall be monitored as follows: by a grab sample once/week during discharge, if any.
- b. The discharge shall not cause excessive foam in the receiving waters. The discharge shall be essentially free of floating and settleable solids.
- c. Samples taken in compliance with the monitoring requirements above shall be taken at a point representative of the discharge but prior to entry into Julia Creek.

B. MONITORING AND REPORTING

1. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge.

2. Reporting

The permittee shall submit monitoring reports (DMR-1 Form) to the Indiana Stream Pollution Control Board containing results obtained during the previous month and shall be postmarked no later than the 28th day of the month following each completed monitoring period. The first report shall be submitted by the 28th day of the month following the month in which the permit becomes effective.

If there is to occur a substantial period of time during which there will be no discharge from an authorized outfall, then the permittee may submit a written request to the Indiana Stream Pollution Control Board for relief from reporting requirements. The Indiana Stream Pollution Control Board may then suspend reporting requirements without public notice or opportunity for public hearing.

The Regional Administrator may request the permittee to submit monitoring reports to the Environmental Protection Agency if it is deemed necessary to assure compliance of the permit.

3. Definitions

a. Daily Average

- (1) Weight Basis - The "daily average" discharge means the total discharge by weight during a calendar month divided by the number of days in the month that the production or commercial facility was discharging. Where less than daily sampling is required by this permit, the daily average discharge shall be determined by the summation of the measured daily discharges by weight divided by the number of days during the calendar month when the measurements were made.
- (2) Concentration Basis - The "daily average" concentration means the arithmetic average (proportional to flow) of all daily determinations of concentration made during a calendar month. Daily determinations of concentration made using a composite sample shall be the concentration of the composite sample. When grab samples are used, the daily determination of concentration shall be the arithmetic average (weighted by flow value) of all the samples collected during the calendar day.

b. "Daily Maximum" Discharge

- (1) Weight Basis - The "daily maximum" discharge means the total discharge by weight during any calendar day.
- (2) Concentration Basis - The "daily maximum" concentration means the daily determination of concentration for any calendar day.

c. The Regional Administrator is defined as the Region V Administrator, U.S. EPA, located at 230 South Dearborn Street, Chicago, Illinois 60604.

d. The Indiana Stream Pollution Control Board is located at the following address: 1330 West Michigan Street, Indianapolis, Indiana 46206.

4. Test Procedures

Test procedures for analysis of pollutants shall conform to regulations published pursuant to Section 304(h) of the Act, the most recent edition of "Standard Methods for the Examination of Water and Wastewater," or other methods approved by the Indiana Stream Pollution Control Board, under which such procedures may be required.

5. Recording of Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

- a. The exact place, date, and time of sampling;
- b. The dates the analyses were performed;
- c. The person(s) who performed the analyses;
- d. The analytical techniques or methods used; and
- e. The results of all required analyses.

6. Additional Monitoring by Permittee

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Indiana Stream Pollution Control Board Monthly Monitoring Report. Such increased frequency shall also be indicated.

7. Records Retention

All records and information resulting from the monitoring activities required by this permit, including all records of analyses performed and calibration and maintenance of instrumentation and recording from continuous monitoring instrumentation, shall be retained for a minimum of three (3) years, or longer, if requested by the Regional Administrator or the Indiana Stream Pollution Control Board.

C. BEST MANAGEMENT PRACTICES PLAN

The Permittee, shall develop and implement a Best Management Practices Plan which specifies appropriate Best Management Practices (BMPs) to reduce storm runoff contamination to the lowest practicable level. These BMPs shall include but are not limited to:

- a. Confining all operations, including transferring of the lead feed from the batch house to the furnace room, so as to minimize contamination of the outside paved area by tire tracks, spills, lead dust, etc.
- b. Installing air pollution control devices in the wrecker area, if needed, to prevent lead dust from escaping into the outside.
- c. Handling acid wastes and neutralizing agents with absolute care.
- d. Sweeping and policing of areas inside and outside the building where lead dust has been accumulating.

The permittee shall submit its BMP Plan to the Technical Secretary of the Indiana Stream Pollution Control Board for review and approval not later than six (6) months after the effective date of this permit.



PART II - INDUSTRIAL PERMIT

A. MANAGEMENT REQUIREMENTS

1. Change in Discharge

All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit. Any anticipated facility expansions, production increases, or process modifications which will result in new, different or increased discharges of pollutants must be reported by submission of a new NPDES application or, if such changes will not violate the effluent limitations specified in this permit, by notice to the permit issuing authority of such changes. Following such notice, the permit may be modified to specify and limit any pollutants not previously limited.

2. Containment Facilities

When cyanide or cyanogen compounds are used in any of the processes at this facility the permittee shall provide approved facilities for the containment of any losses of these compounds in accordance with the requirements of Stream Pollution Control Board Regulation SPC 2.

3. Operator Certification

The permittee shall have the waste treatment facilities under the direct supervision of an operator certified by the Environmental Management Board as required by IC 13-1-6.

4. Noncompliance Notification

If, for any reason, the permittee does not comply with or will be unable to comply with any daily maximum effluent limitation specified in this permit, the permittee shall provide the Regional Administrator and the State of Indiana with the following information, in writing, within five (5) days after becoming aware of such condition:

- a. a description of the discharge and cause of noncompliance; and
- b. the period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncomplying discharge.

5. Facilities Operation

The permittee shall at all times maintain in good working order and operate as efficiently as possible, all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit.

6. Adverse Impact

The permittee shall take all reasonable steps to minimize any adverse impact to navigable waters resulting from noncompliance with any effluent limitations specified in this permit, including such accelerated or additional monitoring necessary to determine the nature and impact of the noncomplying discharge.

7. Bypassing

Any diversion from or bypass of facilities necessary to maintain compliance with the terms and conditions of this permit is prohibited, except (i) where unavoidable to prevent loss of life or severe property damage, or (ii) where excessive storm drainage or runoff would damage any facilities necessary for compliance with the effluent limitations and prohibitions of this permit. The permittee shall promptly notify the Indiana Stream Pollution Control Board and Regional Administrator, by telephone and in writing, of such diversion or bypass.

8. Removed Substances

Solids, sludges, filter backwash, or other pollutants removed from or resulting from treatment or control of wastewaters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering navigable waters and to be in compliance with all Indiana statutory provisions and regulations relative to refuse, liquid and/or solid waste disposal.

9. Power Failures

When a power source is used to operate wastewater treatment facilities in order to maintain compliance with the effluent limitations and prohibitions of this permit, the permittee shall either:

- a. provide an alternative power source sufficient to operate facilities utilized by permittee to maintain compliance with the effluent limitations and conditions of this permit, or
- b. upon the reduction, loss, or failure of one or more of the primary sources of power to facilities utilized by the permittee to maintain compliance with the effluent limitations and conditions of this permit, the permittee shall halt, reduce, or otherwise control production and/or discharge in order to maintain compliance with the effluent limitations and conditions of this permit.

B. RESPONSIBILITIES

1. Right of Entry

The permittee shall allow the Technical Secretary of the Stream Pollution Control Board, the Regional Administrator and/or their authorized representatives, upon the presentation of the credentials:

- a. to enter upon the permittee's premises where an effluent source is located or in which any records are required to be kept under the terms and conditions of this permit; and
- b. at reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit; to inspect any monitoring equipment or monitoring method required in this permit; and to sample any discharge of pollutants.

2. Transfer of Ownership or Control

In the event of any change in control or ownership of facilities from which the authorized discharge emanates, the permittee shall notify the succeeding owner or controller of the existence of this permit by letter, a copy of which shall be forwarded to the Indiana Stream Pollution Control Board and the Regional Administrator.

3. Penalties for False Reporting

Knowingly making any false statement on any report required by this permit may result in the imposition of criminal penalties as provided for in Section 309 of the Act and Section 3(b), Chapter 13, Public Law 100, Acts of 1972, as amended (IC 13-7).

4. Permit Modification

After notice and opportunity for hearing, this permit may be modified, suspended, or revoked, in whole or in part, during its term for cause including, but not limited to, the following:

- a. violation of any terms or conditions of this permit;
- b. obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or
- c. a change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

5. Toxic Pollutants

Notwithstanding Part II, B-4 above, if a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Act for a toxic pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitation for such pollutant in this permit, this permit shall be revised or modified in accordance with the toxic effluent standard or prohibition and the permittee so notified.

6. Civil and Criminal Liability

Except as provided in permit conditions on "Bypassing" (Part II, A-7) and "Power Failures" (Part II, A-9), nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance, whether or not such noncompliance is due to factors beyond his control, such as accidents, equipment breakdowns, or labor disputes.

7. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act.

8. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Act.

9. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights or infringement of Federal, State, or local laws or regulations.

10. Severability

The provisions of this permit are severable and if any provision of this permit, or the application of any provision of this permit to any circumstances is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby.

11. Construction Permit

The permittee shall not construct, install, or modify any water pollution control facilities without a valid construction permit issued by the Indiana Stream Pollution Control Board.

12. Operation Permit

If the permittee operates a wastewater treatment system and does not discharge its effluent to the waters of Indiana, or if the permittee discharges to a municipal sanitary sewer, he must apply for an Operation Permit, pursuant to Stream Pollution Control Board Regulation SPC 15, Part II, Section 2.

Briefing Memo  
October, 1982

RSR Corp.  
Quemetco, Inc.  
900 Quemetco Drive  
Indianapolis, IN 46241  
NPDES Permit No. IN 0053171

Type of Industry

Quemetco is classified as a secondary lead smelter. Used automotive type batteries are cracked and waste lead residues, battery storage plates and other scrap solids are smelted and refined to produce lead and lead alloys.

The Permittee was subject to an Agreed Findings of Fact and Order which was approved by the SPCB on October 16, 1979. The order required Quemetco to construct a storage area for lead related materials, clean up previous storage areas, and redredge the drainage ditch. The Company was to have complied with the Order by December 1980.

The Permittee has not agreed on the lead effluent limitations set by the ISPCB in the draft NPDES Permit No. IN 0053171, Public Noticed on June 24, 1981. Comments of RSR Corporation in response to the draft NPDES Permit were submitted to the ISPCB by the law firm of Akim, Gump, Strauss, Hauer and Feld, Washington, D.C., on July 20, 1981.

Wastewater Source and Treatment

The discharge contains only roof and plant area runoff water. Flow is variable depending upon precipitation. Treatment includes an area perimeter concrete lined collection ditch which leads to a holding tank with a clarifier. Two scrap iron piles are placed in the ditch prior to the holding tank, serving as filtering devices, according to the company.

Receiving Stream

The receiving stream is Julia Creek, which in the absence of USGS data is estimated to have a 7-day, 10-year low flow of 0.0 cfs.

Effluent Limitations Rationale

There are no Federal technology-based guidelines presently applicable to the discharge of storm runoff water at Quemetco, Inc. When a draft permit for reissuance to RSR Corporation's Quemetco plant was recently public noticed on June 24, 1981, staff proposed limits derived from Indiana Water Quality Standards, 330 IAC 1-1. RSR Corporation objected to the lead effluent limit of 0.05 mg/l daily maximum concentration. Their objection was based on their belief that

the 0.05 mg/l effluent standard for total lead was derived from drinking water standards and is inappropriate for Quemetco's discharge since there are no water supply intakes downstream, imposes an onerous burden on the Company, and that such an effluent limitation for storm water runoff from an industrial source is not mandated by either state or federal water pollution control regulations. The public noticed draft permit had set monitoring requirements for flow, oil and grease, lead, sulfate and pH.

The staff, after reviewing the August 27, 1981, September 29, 1981, and October 23, 1981, reports on Quemetco, Inc., by the Inspection and Investigation Section of the Water Pollution Control Division of the ISBH, which indicate the presence in the Company's discharge of several toxic pollutants in addition to lead, has decided that cadmium, arsenic, iron, copper and un-ionized Ammonia-N ( $\text{NH}_3\text{-N}$ ) monitoring requirements should also be included in the present redraft of the permit. Monitoring of sulfates has been dropped, as it does not seem necessary at this stage.

In establishing the limitations set forth in this second draft of the permit, the staff has taken into account the Indiana Water Quality Standards, SPCB Regulation 330 IAC 1-1, as well as the BPT and BAT effluent limitations proposed under Section 304(b) of the Clean Water Act (as amended by P.L. 92-500 and P.L. 95-217; 33 U.S.C. 1251 et seq.) for the Secondary Lead Subcategory in the Draft Development Document for Effluent Limitations Guidelines and Standards for the Nonferrous Metals Manufacturing, Point Source Category, EPA, 1979. This Development Document contains an overview of 32 applicable plants and includes raw process water characteristics as well as effluent qualities after various levels of treatment.

Following is a discussion of the derivation of the proposed effluent limitations and best management practices.

#### Storm Runoff Containment and Flow Regulation

The initial obstacle in controlling the contaminated storm runoff from Quemetco's facility is the inadequate containment capacity provided by the existing catch basin. The result is high variability of wastewater flow rate when runoff from storm events exceeds that capacity. Obviously, it is difficult to provide a consistent level

of treatment under such conditions. Thus, it is imperative that the storm runoff be collected and its flow regulated prior to treatment. To accomplish this, a special condition incorporated in the draft NPDES permit states that the permittee shall provide storm runoff collection facilities, constructed and operated so as to contain the precipitation from the 10-year, 24-hour rainfall event as established by the National Climatic Center, National Oceanic and Atmospheric Administration, for the area in which the permitted facility is located. In addition, it is stated that no discharge limitations shall apply to the discharge of storm runoff which occurs in excess of the available capacity of the plant's storm runoff containment and treatment facilities when constructed and operated so as to treat and discharge impounded storm runoff at a minimum daily flow rate equal to the volume of the storm runoff resulting from the 10-year, 24-hour rainfall event divided by seven (7). The required volume of the runoff storage tank was estimated at approximately 3,060 M<sup>3</sup> (800,000 gallons).

Following is a discussion of the proposed limitations for lead, cadmium, arsenic, copper, iron, oil & grease, ammonia nitrogen, and pH.

#### Total Lead

Technology-based considerations. For technology-based guidelines, according to the Environmental Protection Agency's Draft Development

Document for Effluent Limitations Guidelines and Standards for the Nonferrous Metal Manufacturing Point Source Category<sup>4</sup>, the proposed total lead effluent limitations for process wastewater from secondary lead battery cracking have the following values for various degrees of treatment: 0.2 mg/l 30-day average (BPT-equivalent, i.e. chemical precipitation, filtration); 0.1 mg/l 30-day average (BAT-equivalent, i.e., chemical precipitation, filtration, activated carbon); and, 0.02 mg/l 30-day average (BAT-equivalent, i.e. chemical precipitation, filtration, reverse osmosis). Even though the aforementioned numbers reflect lead values attainable through treatment of process wastewater from battery cracking operations, the staff believe that these figures can approximate effluent lead levels from the treatment of stormwater runoff from such facilities.

Water Quality-based considerations. It has been well documented that lead is a toxic metal that tends to accumulate in the tissues of man and other animals. This characteristic is not critical in the present case since there is no expected use of the receiving stream for drinking water by humans, domestic animals or wildlife prior to its confluence with a considerably larger stream.

The acute and chronic adverse effects of lead have been studied with a variety of freshwater organisms, but the influence of pH, hardness, and other factors on the solubility and form of Pb prevent the recommendation of freshwater criteria based on acute toxicities alone<sup>2</sup>. For example, solubilities of lead compounds can range from 0.001 mg/l at pH 9 to 10,000 mg/l at pH 5, and from 0.5 mg/l in soft water to 0.003 mg/l in hard water. According to the U. S. Environmental Protection Agency's

Ambient Water Quality Criteria for Lead<sup>1</sup>, at 20 mg/l hardness (as  $\text{CaCO}_3$ ) the 96-hr  $\text{LC}_{50}$  values for bluegill and fathead minnow are 23.8 mg/l and 2.4 mg/l, respectively, while at 360 mg/l hardness (as  $\text{CaCO}_3$ ) the 96-hr  $\text{LC}_{50}$  values for the same species are 442 mg/l and 482 mg/l, respectively. Additional data on the toxicity of soluble lead indicate that in hard water (alkalinity 243 mg/l) the 96-hr  $\text{LC}_{50}$  for rainbow trout (a species similar in sensitivity to the fathead minnow) is 471 mg/l for total lead but 1.38 mg/l for soluble lead<sup>2</sup>.

In the effort to establish a lead effluent limit for the battery recycling facility which could satisfy Indiana's water quality standards<sup>3</sup> (0.1 of the 96-hour  $\text{LC}_{50}$  for important, indigenous species), the following factors were taken into consideration:

- a. As it is shown in Table III total lead concentrations in the company's discharge ranged from 6.9 mg/l to 40 mg/l, while dissolved lead values ranged from 2.7 mg/l to 4.9 mg/l, constituting up to 71 percent of the total lead in one sample. Furthermore, additional analyses of the same samples had shown that the pH of the effluent ranged from 5.0 to 6.1 and the alkalinity from 16 mg/l to 20 mg/l, indicating very favorable conditions for high lead solubility and thus high lead toxicity.
- b. Water samples taken from the receiving stream about one quarter of a mile, each way, upstream and downstream of the company's discharge showed total lead concentrations of 0.01 mg/l and 7 mg/l, respectively, and alkalinity values of 212 mg/l and

120 mg/l, respectively. These numbers indicate that the plant's discharge not only substantially pollutes the receiving stream with lead but it also decreases the stream's alkalinity, thus increasing the potential for lead toxicity.

- c. In 1980 the Water Quality Surveillance and Standards Branch of the Water Pollution Control Division of the Indiana State Board of Health released three reports on the water quality of the creek which has, as its tributary, the stream receiving the battery recycling plant's runoff. According to these reports, no fish were found in the company's receiving stream. Bluegills and fathead minnows were among the indigenous species found upstream from the confluence of the two creeks, while the fish population downstream from the confluence was greatly diminished.

Based on the above considerations, the proposed lead effluent limitations of 0.15 mg/l 30-day average and 0.30 mg/l daily maximum were established. These limits are considered strict enough to protect water quality, while being within achievability range of BAT-equivalent treatment, based on the Draft Development Document for Nonferrous Metal Manufacturing.

The water quality protection claim is based, in summary, on the following observations:

Since the company's discharge shows low alkalinity and pH and since soluble lead makes up a considerable portion of its total lead



content, it is reasonable to base the Minimum Water Quality for Aquatic Life requirements for Indiana<sup>3</sup> on the one-tenth of the 96-hour LC<sub>50</sub> data for soluble lead or total lead in soft water. For fathead minnows the 0.1 of the 96-hour LC<sub>50</sub> values would be 0.24 mg/l for total lead in 20 mg/l hardness (as CaCO<sub>3</sub>) and 0.14 mg/l for soluble lead in 243 mg/l alkalinity, according to data reported above.

Assuming the receiving stream's water hardness to be between 100 mg/l and 150 mg/l (as CaCO<sub>3</sub>) downstream of the permittee's discharge, the corresponding acute values for total recoverable lead (all lead forms except lead compounds bound in minerals, clays and sand) in the stream should be 0.172 mg/l (100 mg/l hardness) and 0.282 mg/l (150 mg/l hardness), according to the logarithmic equation recommended in Ambient Water Quality Criteria for Lead<sup>1</sup> for calculating an instantaneous maximum in-stream concentration (in ug/l)<sup>2</sup> --  $e^{(1.22(\ln(\text{hardness}))-0.47)}$ .

#### Total Cadmium

The proposed concentration limits were based on requirements necessary to meet the 0.02 mg/l Indiana water quality standard for cadmium (see Table I). Water quality criteria for cadmium recommended by the U. S. Environmental Protection Agency are considerably more stringent. According to the U. S. Environmental Protection Agency's publication Ambient Water Quality Criteria for Cadmium<sup>1</sup>, for total recoverable cadmium the criterion (in ug/l) to protect freshwater aquatic life is the numerical value given by  $e^{(1.05(\ln(\text{hardness}))-8.53)}$  as a 24-hour average (chronic value), and the concentration (in ug/l) should not exceed the numerical value given by  $e^{(1.05(\ln(\text{hardness}))-3.73)}$  at any time (acute value). For example at hardnesses of 50, 100, and

200 mg/l (as  $\text{CaCO}_3$ ) the criteria are 0.000012, 0.000025, and 0.000051 mg/l (chronic values), respectively, and 0.0015, 0.003 and 0.006 mg/l (acute values), respectively.

The drastically more stringent U. S. Environmental Protection Agency criteria were not deemed relevant to the present case for two reasons: (i) the specific numbers are based primarily on bioassay data for cold water fish species not indigenous to the receiving stream and for invertebrate species, both of which are generally more sensitive to cadmium than warm water fish species; and (ii) the U. S. Environmental Protection Agency criteria - chronic and acute - are not technically equivalent to the State's standard of 0.1 times the 96-hour  $\text{LC}_{50}$  concentration.

In the authors' opinion, the cadmium concentration typically used to implement the State standard - 0.02 mg/l - is adequate for prevalent warm water fish species and would provide a fair degree of protection to the more sensitive invertebrate species.

In the U. S. Environmental Protection Agency's Draft Development Document for Effluent Limitations Guidelines and Standards for the Nonferrous Metals Manufacturing Point Source Category<sup>4</sup>, the proposed cadmium effluent limitations for process wastewater from secondary lead battery cracking areas follows for various degrees of treatment: 0.02 mg/l 30-day average (BPT-equivalent, i.e. chemical precipitation, filtration), and 0.005 mg/l 30-day average (BAT-equivalent, i.e. reverse osmosis or activated carbon process added to the precipitation-filtration scheme).

According to the Indiana State Board of Health staff's judgment, the proposed 0.01 mg/l 30-day average and 0.02 mg/l daily maximum cadmium effluent limits are sufficient to meet Indiana's water quality standards, and, at the same time, lie within BAT-equivalent treatment effluent values.

#### Total Arsenic

The proposed effluent limitations for arsenic were based on the staff's best professional judgment of BAT and were more stringent than would result solely from State water quality standards.

Achievable values for arsenic (total) after treatment of process wastewater from secondary lead battery cracking, as presented in the Draft Development Document for Nonferrous Metals, are 0.03 mg/l as a 30-day average for BPT-equivalent treatment (i.e., chemical precipitation, filtration) and 0.003 mg/l as a 30-day average for BAT-equivalent treatment (i.e. activated alumina, or reverse osmosis, or activated carbon step added after filtration). It was recognized that BAT-equivalent treatment of the stormwater runoff may not produce the 0.003 mg/l arsenic effluent quality achievable from process wastewater treatment. However, the Indiana State Board of Health staff believed that the 0.03 mg/l 30-day average and 0.06 mg/l daily maximum proposed arsenic limits could be achieved when BAT-equivalent treatment is used (i.e. precipitation, filtration, activated alumina).

The in-stream concentration usually employed by staff of the Indiana State Board of Health as representing the State water quality standard for protection of warm water fisheries is 0.1 mg/l. The slightly lower concentrations deemed achievable by BAT are welcome in view of the generally held suspicion that arsenic is a human carcinogen as discussed in the U. S. Environmental Protection Agency's publication Ambient Quality Criteria for Arsenic<sup>1</sup> (p. c-112). In that publication, incremental cancer risks of  $10^{-5}$ ,  $10^{-6}$ , and  $10^{-7}$  are associated with in-stream arsenic concentrations of 0.175 ug/l, 0.0175 ug/l, and 0.00175 ug/l, respectively, on the assumption that arsenic exposure derives solely from the consumption of aquatic organisms taken from waters with such concentrations. The affected immediate watershed in the present case is not a significant source of fish for human consumption and the carcinogenic potential of the arsenic discharge would not be a major factor in the application of water quality standards.

#### Total Copper

The proposed effluent limits for copper of 0.05 mg/l as a 30-day average and 0.10 mg/l as a daily maximum are based on State water quality standards. These limits appear to be beyond the range of attainability of BAT-equivalent treatment as proposed for secondary lead smelters in the Draft Development Document for Nonferrous Metals Manufacturing.

Indiana State Board of Health staff have typically interpreted the State water quality standard for warm water fisheries to be an instream concentration of 0.020 mg/l for total copper, although higher

concentrations have occasionally been applied where receiving waters are characterized by a high degree of hardness (i.e., greater than 300 mg/l as  $\text{CaCO}_3$ ) as a concession to the technical difficulties often inherent in treating to such low concentrations. A review of the bioassay data in Ambient Water Quality Criteria for Copper<sup>1</sup>, published by the U. S. Environmental Protection Agency, disclose 0.300 mg/l to be representative of the 96-hour  $\text{LC}_{50}$  concentrations, at a hardness of 200 mg/l (as  $\text{CaCO}_3$ ), for a number of small warm water fish species which may be expected in the affected watershed. Thus, the State standard for a maximum instream concentration would be one-tenth that concentration -- 0.030 mg/l. This number is relatively consistent with the total recoverable copper concentrations not to be exceeded at any time -- 0.022 mg/l and 0.043 mg/l at hardnesses of 100 and 200 mg/l (as  $\text{CaCO}_3$ ) -- recommended by the U. S. Environmental Protection Agency in the above referenced criteria document.

The Draft Development for Nonferrous Metals Manufacturing indicates an effluent copper concentration of 0.11 mg/l as a 30-day average to be attainable with the alternative BAT-equivalent treatment technologies referenced earlier in this discussion (i.e., chemical precipitation and filtration followed by activated alumina and, optionally, by activated carbon). Whether the proposed limits can be attained by additional treatment, such as a sulfide precipitation operation, or an alternative treatment approach, such as reverse osmosis or ion exchange, at an affordable cost remains problematic. Ultimately, the key to economical compliance may be in substantial reduction of the process pollutants at their sources through use of best management practices such as discussed in the following section. The proposed effluent limits represent a compromise between water quality objectives and technological feasibility.

Iron

The concentration limits are based on requirements necessary to meet Indiana water quality standards. A provision for review of the monitoring requirements, after six months from the permit issuance date, is included. The staff believes that changes, namely, removal of the scrap iron piles from the ditch, to exclude iron from the runoff wastestream are possible.

Ammonia Nitrogen

The concentration limit for unionized ammonia is based on its toxic characteristics and is to assure compliance with water quality standards.

Oil & Grease

The proposed limits represent both water quality standards and staff's judgment of BCT.

pH

The proposed limits are based on water quality standards.

## BEST MANAGEMENT PRACTICES PLAN

Traditionally, NPDES permits have contained pollutant-specific numerical effluent limits. To improve water quality, the Clean Water Act provides for water pollution controls supplemental to effluent limitations guidelines. Best Management Practices (BMPs) are one such supplemental control. BMPs are authorized under the 1977 Clean Water Act for the control of discharges to receiving waters of significant amounts of any pollutant listed as hazardous under Section 311 of the Act or toxic under Section 307 of the Act from activities which are associated with or ancillary to industrial manufacturing or treatment processes. The types of discharges to be controlled by BMPs are plant site runoff, spillage and leaks, drainage from raw material storage areas, and sludge and waste disposal. Pursuant to Sections 304 and 402 of the Act, BMPs may be incorporated as permit conditions, and although normally qualitative, are expected to be most effective when used in conjunction with numerical effluent limits in NPDES permits.

In Quemetco's case, BMPs are proposed to be incorporated in the NPDES permit to reduce storm runoff contamination to the lowest practicable level prior to any degree of treatment. These BMPs included:

- a. Confining all operations, including transferring of the lead feed from the storage area to the furnace room, so as to minimize contamination of the outside paved area by tire tracks, spills, lead dust, etc.

- b. Installing and maintaining air pollution control devices in the wrecker area, if needed, to prevent lead dust from escaping into the outside.
- c. Handling acid wastes and neutralizing agents with absolute care.
- d. Sweeping and policing of areas inside and outside the building where lead dust has been accumulating.

The best management practices specified are largely recognizable as commonsense approaches to materials handling and good housekeeping which should be quite economical to implement. These practices are particularly appropriate and potentially effective in the present case considering the manner in which the pollutants predominantly arise.

#### Expiration Date

A five-year permit is proposed, since all limits are water quality-based and are judged to be at least as stringent as BAT and BCT, as applicable.

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Post-Public Notice Revisions

Page 1 of the permit is revised to identify the permittees as RSR Corporation and its subsidiary Quemetco, Inc. Since the discharge from the facility is to include noncontact cooling water as well as storm runoff, page 2 of the permit is revised accordingly. Paragraph c. on page 3 of the permit, which prohibits the discharge of oil so as to cause a film or sheen on the receiving waters is deleted.